

**AMENDMENT AND RESPONSE**

Serial Number: 08/903,453

Filing Date: July 29, 1997

Title: CARBURIZED SILICON GATE INSULATORS FOR INTEGRATED CIRCUITS

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Dkt: 303.378US1

**Double Patenting**

The Examiner provisionally rejected claims 1-6 under the judicially created doctrine of obviousness-type double patenting over claims 11-18 of copending Application Serial No. 08/902,843. The applicant will address this issue when pending claims in Application Serial No. 08/902,843 are indicated as allowable and the pending claims in the above-identified application are otherwise indicated as allowable.

**Rejection Under 35 U.S.C. 103(a)**

Claims 1-3 were rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (Japanese Application Publication No. 08-255878, Sugita) in view of Yee et al. (J. Mater. Res., Vol. 11, No. 8, Aug. 1996, Yee). The applicant respectfully traverses.

Claim 2 recites an integrated circuit field effect transistor including, among other elements, a source and a drain separated by a channel supported by a semiconductor substrate, a gate supported by the substrate and extending between the source and drain above the channel, and an insulative amorphous layer of carburized silicon formed between the channel and the gate.

Sugita is deficient in the following respects. Sugita discloses in Figure 1 a floating gate transistor with a beta-SiC film 5 between a substrate 1 and a floating gate 6. Sugita does not disclose an amorphous layer of carburized silicon.

Yee does not supply the elements missing in Sugita. Yee discloses an experimental procedure for generating amorphous silicon carbide films, but does not disclose or suggest an amorphous layer of carburized silicon formed between a channel and a gate in a field effect transistor.

Therefore, even as combined, Sugita and Yee do not disclose or suggest the claimed invention.

Furthermore, there is no suggestion in either Sugita or Yee for the combination put forward by the Examiner. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Jones*, 21 USPQ2d 1941 (Fed. Cir. 1992); *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988).

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In the Introduction on page 1979 Yee discloses the favorable mechanical properties of amorphous carbon-based films and their use as protective coatings on optical windows, tool bits, and magnetic recording media. However, Yee does not disclose or suggest that the amorphous carbon-based films may be substituted for a beta-SiC film in a transistor. In fact, Yee does not disclose that amorphous carbon-based films are used at all with semiconductor devices, and does not mention semiconductor devices in the reference.

The applicant respectfully submits that neither Sugita or Yee, alone or in combination, disclose or suggest all of the elements recited in claim 2. Claims 1 and 3 recite elements similar to the elements recited in claim 2. For reasons analogous to those stated above, and the limitations in the claims, the applicant respectfully submits that neither Sugita or Yee, alone or in combination, disclose or suggest all of the elements recited in claims 1 and 3.

**CONCLUSION**

The applicant respectfully submits that all of the pending claims are in condition for allowance and such action is earnestly solicited. The Examiner is invited to telephone the below-signed attorney at 612-373-6973 to discuss any questions which may remain with respect to the present application.

Respectfully submitted,

LEONARD FORBES ET AL.

By their Representatives,

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Date 8/27/99

By \_\_\_\_\_

Robert E. Mates  
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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner of Patents, Washington, D.C. 20231 on August 27, 1999.

Name Jane Attn

Signature Jane E. Attn